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Assessing India's Perceptions of China's Nuclear Expansion

By Rajeswari Pillai Rajagopalan



Trucks carry ballistic missiles during a parade commemorating the founding of the People's Republic of China in Beijing, on October 1, 2019. (Photo by Mark Schiefelbein/AP)

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Summary

- India is monitoring China's ongoing expansion of its nuclear arsenal carefully, looking to identify China's goals, gauge the impact on regional security, and determine its response.
- A significant increase in the size of China's nuclear arsenal, together with the adoption of a generally coercive posture toward India or a change in China's no-first-use (NFU) nuclear policy, could compel India to respond.
- Interviews with former senior Indian civilian and military officials suggest that India's response will not seek to match China's nuclear expansion but will address the imbalance qualitatively, focusing on developing longer-range and submarine-launched missiles and other technological enhancements.
- The strong expectation is that China will not abandon its NFU stance, though it may modify certain policies within its NFU stance.
- There was consensus among the interviewees on most subjects, but they were divided about whether China's nuclear force structure will continue to emphasize land-based missiles or shift to emphasize submarines, which India has limited ability to track.
- India and the United States could both benefit from closer interactions on addressing the rationale and consequences of China's nuclear expansion.



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ABOUT THE REPORT

This report examines attitudes among India's strategic community toward China's ongoing expansion of its nuclear arsenal and outlines the likely future direction of India's nuclear policy in response to that expansion. Research was based on 21 interviews with retired senior Indian foreign service officers and military officers, as well as with influential scholars. The report was commissioned by the United States Institute of Peace's South Asia program.

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Indian Army vehicles move in a convoy in the Ladakh region of India on September 18, 2022, where Indian and Chinese forces engaged in a standoff from early 2020 to late 2024. Despite the presence of thousands of troops along the border, nuclear weapons have never been a factor in the confrontation. (Photo by Mukhtar Khan/AP)

Introduction

China's ongoing "significant expansion" of its nuclear weapons program may be aimed at achieving nuclear parity with the United States, but it reinforces China's hegemony within Southern Asia and is the subject of increasing attention in India.¹ India's own nuclear weapons program, including the development of long-range missiles and a slow but steady increase in the number of nuclear warheads, has been largely focused on building a force to deter China. China's nuclear expansion thus has the potential to provoke an Indian response.

In the past few years, Sino-Indian relations have grown increasingly tense. The two countries have been in a border standoff for more than four years after clashes between Chinese and Indian troops in the spring of 2020, which resulted in the first deaths on the disputed border in over four decades. Following the clashes, India and China amassed more than 100,000 troops on the approximately 2,100-mile boundary.² Although the two countries announced a deal to reduce tensions in October 2024, troops remain along the border and full de-escalation has yet to happen. It is important, however, to note that nuclear weapons were never a factor in the confrontation. Both India and China view nuclear weapons as strategic tools for deterring other nuclear weapons rather than as military tools for warfighting. Even so, the two countries' nuclear

capabilities always lurk in the shadows of their military calculations, and any significant shift in those capabilities has the potential not only to alter bilateral relations but also to shape the strategic dynamics within the region. India's nuclear program has historically been conditioned by a Chinese nuclear force that was relatively limited. Although there are indications that India expected some expansion of China's nuclear arsenal, the scale of the expansion over the past three years appears to have come as a surprise, and it remains unclear how India will respond to this. It is possible that if China's nuclear force surpasses 1,000 warheads, India will feel pressured to pursue some kind of expansion, even if not a matching one.

Thus far, the Indian government has not responded publicly to China's nuclear expansion. This is unsurprising, as India has traditionally not commented on changes in China's military posture and views China's embrace of no first use (NFU)—the commitment not to use nuclear weapons first in a military confrontation—as relatively stable. However, a significant increase in the size of China's arsenal that leads to a qualitative enhancement of its strategic capabilities, along with the adoption of a posture of coercive or launch-on-warning elements (a strategy that would allow for nuclear use if sensors detected an incoming missile attack), could upset India's strategic calculations.

The Indian government is unlikely to publicly announce any changes to its doctrine or posture. However, it is possible to gain insight into concerns about China's nuclear expansion and how India might respond by soliciting the opinions of former officials who have previously focused on these issues in an official capacity.³ This report draws on 21 interviews with members

Abbreviations

A2/AD	anti-access/area denial strategy
ABM	anti-ballistic missile
BMD	ballistic missile defense
CMC	Central Military Commission (China)
HGV	hypersonic glide vehicle
ICBM	intercontinental ballistic missile
INF	intermediate-range nuclear forces
IRBM	intermediate-range ballistic missile
MIRV	multiple independently targetable reentry vehicle
NFU	no first use
PLA	People's Liberation Army (China)
PLARF	People's Liberation Army Rocket Force (China)
SFC	Strategic Forces Command (India)
SLBM	submarine-launched ballistic missile
SSBN	ballistic missile submarine
SSF	Strategic Support Force (China)
TNW	tactical nuclear weapon

of the Indian strategic community. The interviewees included retired senior Indian foreign service officers who served in China and those whose remit included China or nuclear issues at the Ministry of External Affairs; retired senior military officers, including individuals who were part of the Strategic Forces Command (SFC), which oversees India's nuclear arsenal; and scholars who have studied China's nuclear developments. Among the interviewees were one former national security adviser, one former military adviser to India's deputy national security adviser, two former commanders of the SFC, two former Indian Army chiefs, two former Indian Navy chiefs, and one former prime minister's special envoy for disarmament and nonproliferation.⁴ The report also draws on the publicly available literature on the subject, although that is limited.⁵

The research for the report focused on three central questions: What are the views of Indian analysts regarding Chinese nuclear expansion, both in qualitative and quantitative terms, particularly since the discovery of new missile silos in 2021? What types of Chinese nuclear advances might disrupt India's current strategic calculations? How might India respond?

This report is divided into four sections. The first outlines changes in China's nuclear posture. The second details the interviewees' assessments of those changes, looking first at several issues on which there was broad consensus and then at the issues on which opinions differed significantly.⁶ Attention shifts in the third section to the analysts' views on how India should respond to China's nuclear buildup. Among the options discussed—but not necessarily endorsed—are a change in India's NFU policy, an expansion or reconfiguration of India's own nuclear arsenal, and a resumption of nuclear testing. The final section outlines the likely future direction of India's nuclear policy and identifies policy implications for Washington.

China's Expanding Nuclear Arsenal

Sometime in early 2021, China began constructing large fields of missile silos for new intercontinental ballistic missiles (ICBMs).⁷ According to Hans Kristensen and Matt Korda from the Federation of American Scientists, there appeared to be “at least three vast missile silo fields under construction near Yumen, Hami, and Ordos in north-central China.”⁸ This assessment, made using satellite imagery, seems to confirm what the US government has previously emphasized—that China will at least double the size of its nuclear warhead stockpile in the coming decade.⁹ According to analysts, construction is well underway at the missile silos sites as well as at a People's Liberation Army (PLA) Rocket Force training site near Jilantai (also in north-central China). The site near Yumen reportedly has 120 silos, while the one near Hami has 110 silos. The site near Ordos, which was found by a military research unit at the United States Air Force's Air University, has about 40 silos.¹⁰

The Chinese nuclear warhead stockpile is also expanding briskly. In 2019, Kristensen and Korda estimated that China had approximately 290 nuclear warheads.¹¹ In the same year, the US Defense Intelligence Agency director, Lt. Gen. Robert P. Ashley Jr., offered a similar estimate, stating that China's warheads were “in the low couple hundreds.”¹² By the following year, Kristensen and Korda had revised the number upward, suggesting in their 2020 annual assessment that “China has produced a stockpile of approximately 350 nuclear warheads.”¹³ Several subsequent US government reports have revised these assessments to suggest even faster



A Chinese Jin-class nuclear submarine participates in a naval parade commemorating the 70th anniversary of the founding of China's People's Liberation Army Navy off the coast of Shandong Province on April 23, 2019. Some experts think that ballistic missile submarines will become a centerpiece of China's nuclear force. (Photo by Mark Schiefelbein/Pool via AP)

growth.¹⁴ According to the latest assessment by Kristensen, Korda, and their coauthors Eliana Johns and Mackenzie Knight, China now has roughly 500 nuclear warheads.¹⁵

China appears to be focused on strengthening the survivability of its nuclear forces by improving their mobility, which makes them harder for adversaries to target. China is also developing dual-use missiles and thus a capacity for “hot-swapping” (the ability to switch between nuclear and conventional warheads). This in turn can make it more difficult for other states to tell whether a missile is nuclear or conventional.¹⁶ In addition, China is improving the precision and range of its delivery systems.

In terms of doctrinal changes, Beijing still stands by its NFU policy and minimum deterrence posture, which indicates a focus on countervalue targeting (threatening cities or civilian populations) rather than counterforce targeting (threatening military sites). While some reports have suggested debates within China on its NFU stance, it is unclear how serious these debates are.¹⁷ There has been no change in the official policy or the broader approach to the use of nuclear weapons, although modifications such as launch-on-warning or launch-under-attack can be made without changing its NFU stance.¹⁸

Uncertainty surrounds the recent and continuing nuclear expansion. If China is planning to deploy more than 1,000 ballistic missiles, the proportion of ICBMs to intermediate-range ballistic

missiles (IRBMs) will be indicative of what kind of nuclear deterrent roles China prioritizes. More IRBMs would suggest a focus on regional deterrent purposes whereas more ICBMs would suggest a greater deterrence focus on the United States. While achieving quantitative parity with the United States (based on current numbers) would require approximately 800 ICBMs, China also has regional threats to which it devotes at least a portion of its nuclear arsenal. Further questions revolve around the role of the other two legs of China's nuclear triad (air and sea), including the possible development of a new stealth strategic bomber and of more capable ballistic missile submarines. Overall, China's growing nuclear force raises important but still unanswerable questions about whether Beijing might change its nuclear doctrine and targeting philosophies—for instance, by moving from a predominantly countervalue targeting strategy to counterforce targeting.

Indian Assessments of China's Nuclear Expansion

China's nuclear expansion elicited a variety of opinions from the Indian analysts interviewed for this report, but there was broad consensus on most issues. After first explaining the sources on which those analysts rely for their information, this section examines several areas on which there was agreement: China's NFU policy; the logic of China's nuclear expansion; the air-, land-, and sea-based legs of China's nuclear triad; tactical nuclear weapons, and dual-use missiles. The section concludes by noting areas on which the analysts disagreed: the potency of China's nuclear force; the expansion in the number of Chinese missile silos; and recent reforms to the institutions that remain pertinent in the context of China's nuclear forces.

WHERE INDIAN ANALYSTS GET THEIR INFORMATION

Indian analysts both inside and outside of government appear to be largely dependent on Western open-source assessments for information about China's nuclear force modernization. In interviews conducted for this research, almost all interviewees mentioned the *Bulletin of the Atomic Scientists* and other open-source reports.¹⁹ Some noted that they also pay attention to reports from the US Department of Defense and Chinese leaders' public declarations, such as Xi Jinping's speeches. One former military official said that India does not have the means to monitor China's nuclear force modernization on its own. Interviewees' interpretations of the information they consume also seem to be shaped by Western sources, not least because only a handful have Chinese-language skills.

However, a few analysts also expressed some skepticism of Western sources, with one suggesting that the United States wants India to be a buffer between the United States and China and that India therefore should not assume that information from US sources is necessarily objective or accurate. One official suggested that Indian analysts should not depend on Western sources and should instead turn to the Taiwanese and Japanese literature on China's nuclear capabilities. However, none of the interviewees directly contradicted the Western reports.

At least some interviewees supplemented their Western sources with material they encountered while in government. Two former diplomats mentioned an internal Indian government

assessment that suggested China began exploring nuclear expansion in the late 2000s. One of them also stated that China conducted a review sometime in the decade and concluded that its existing arsenal would not be “sufficient” (presumably for deterrent purposes). India appears to have shared this assessment with Russia, which agreed with it. It is unclear if India discussed its concerns with the United States; however, there was a strong consensus among the interviewees that India should do so. A third official mentioned that China had reviewed the quality of its nuclear capabilities and concluded that it had to improve these by moving from liquid- to solid-fuel missiles. Considering that all three of these former officials were in government in the mid- to late 2000s, it seems likely that these assessments were undertaken by Indian security agencies around that time. The assessments may have been based purely on Western sources, but the fact that US reports at that time had referred only to qualitative improvements in China’s nuclear force, and not to any specific quantitative expansion, suggests that the Indian assessment was based on Indian sources of information.²⁰

CHINA’S NO-FIRST-USE POLICY

The interviewees agreed that China views nuclear weapons as political tools meant for deterrence, not as warfighting weapons, and thus is not going to reverse its NFU policy. Still, there were some minor variations in perspectives on the motivations for the policy. One view was that optics are important for China, and Beijing wants to demonstrate through its policy that China is different from the United States because it wants to be seen as a responsible actor. Another suggested that China will not walk away from the NFU policy because of its grand strategic perspective, which sees value in NFU. Some noted that claims of China moving away from NFU were all coming from Western sources and suggested that China was trying to keep the United States guessing by planting seeds of doubt. Although some in India continue to suggest that China might change its NFU policy, this does not appear to be the predominant view.²¹ The idea that there might be a loophole—the possibility that the policy might not apply to territories that China considers its own, such as the state of Arunachal Pradesh in the northeast of India, which the Chinese call Southern Tibet—also does not appear to enjoy the currency it once had.²²

But Indian analysts believe that China can be flexible within an NFU policy. Interviewees noted that China can adopt a launch-under-attack or launch-on-warning posture without changing its NFU policy. Another view was more categorical—namely, that Beijing’s policy provides a broad framework within which China has already developed a launch-on-warning capability. One interviewee suggested that China is in the process of changing its strategy to launch-on-warning and that it is implementing space-based early warning capabilities for this purpose. This view is supported by the fact that Russia is providing China fairly robust early warning systems.²³ While analysts have noted that the move to “a limited nuclear deterrence posture” despite maintaining NFU policy is “worrying” in principle, they do not see China giving up its declaratory policy.²⁴ The general view was that there is no reason for China to jettison its NFU policy, but that it can adapt this posture to launch-on-warning.

Interviewees generally believed that China will maintain its ambiguity along with some hazy redlines but not change its posture because of the costs this could have in the current geopolitical environment. Some also drew a parallel to similar discussions in India (which also has an

NFU posture) on the importance of NFU for demonstrating that India is a responsible nation. When China omitted any mention of NFU in its 2013 Defense White Paper, it was seen by some as purposeful and an indication that China was thinking through a first-strike posture. However, even among those interviewees, the cost of abandoning NFU and in turn losing respectability as a responsible actor was seen as higher than China is willing to bear.²⁵

Some analysts suggested that while China will not change its declaratory policy, it is building up the elements for a first-strike capability. Although this is not a common view, other analysts raised the possibility of movement toward not only a launch-on-warning posture, but also a first-strike capability in case its conventional military operations were to fail in wartime. Some also pointed out that while Chinese declarations and white papers contain no explicit references to a change in policy, an active internal debate is nonetheless taking place, as can be seen in the numerous articles written by Chinese military officials about the need for change. This debate was seen as reasonable considering the country's nuclear expansion.

Some interviewees also noted the impact of Russia's war against Ukraine and pointed to articles in Chinese media and in Chinese academic journals that argue that Russia's possession of nuclear weapons is deterring US and NATO forces from becoming directly involved in the war. China, said these interviewees, is looking at similar scenarios regarding Taiwan and may have learned a dangerous lesson: threatening a nuclear first strike can constrain the conventional military operations of its adversaries.

THE LOGIC OF CHINA'S NUCLEAR EXPANSION

There was a broad consensus among the interviewees that China has expanded its nuclear forces as a direct consequence of its strategic competition with the United States. But the picture, they pointed out, is complex, with many factors in play. One is China's desire to be a global power by 2049, the hundredth anniversary of the founding of the People's Republic. As it pursues this goal, China will naturally benchmark its political influence, economic might, and military power against that of the United States. According to this perspective, however, China's nuclear buildup is just one component of its pursuit of this global power status; it does not necessarily need to achieve parity in terms of numbers of warheads or missiles to achieve this goal.

A variation of this view suggested that China is trying to come closer to the benchmark set by the United States because China does not want to be left with lower levels of capability if there are future negotiations over a bilateral, trilateral, or broader arms control arrangement. Yet another variation held that nuclear weapons allow for a faster way to reach parity with the United States, presumably because it is easier for China to build up its nuclear forces than to achieve parity in conventional military capabilities. Other interviewees saw nuclear expansion as primarily a status symbol for China and for Xi Jinping in particular.²⁶ This opinion echoes arguments advanced by Indian scholars that China believes "a bigger arsenal will fetch it better respect from Washington."²⁷

Beyond these general political factors, the interviewees also considered specific contingent factors as possible drivers of China's nuclear expansion. One was Taiwan, where China would like to use the nuclear card to prevent the United States from intervening directly. Another was China's anti-access/area denial (A2/AD) strategy: there is a possibility that China could undertake a demonstrative strike in the Indo-Pacific region using low-yield tactical nuclear weapons to deter the United States from intervening.²⁸

A more strategic reason for reducing the size disparity between Chinese and US nuclear forces is the difficulty that the US ballistic missile defense (BMD) systems create for China's retaliatory forces, especially in the context of the US withdrawal from the Anti-Ballistic Missile (ABM) and Intermediate-Range Nuclear Forces (INF) Treaties and its development of missile defense systems and global strike capabilities.²⁹ Before China embarked on its current program of expansion, its nuclear force was simply too small to survive a US first strike and penetrate the US BMD shield, both of which are requirements for establishing a credible retaliatory strike capability. In addition, China needs the capacity to target other potential adversaries, including India, Japan, and Vietnam. US missile tests after the US withdrawal from the INF Treaty were also seen as triggers for China's expansion. Similarly, a former military official said that the United States' overhaul of its nuclear forces likely contributed to China's expansion.

The interviewees expressed some confusion about the logic of China's nuclear expansion. Continued expansion, even if based on threat perceptions, may eventually create problems for NFU. If China continues to expand its nuclear arsenal, the result will be a mismatch between its NFU posture and its large stockpile of nuclear warheads. The assumption here appears to be that a larger nuclear arsenal, comparable to that of Russia or the United States, will lead China to adopt nuclear strategies similar to the Russian and US strategies.

CHINA'S NUCLEAR TRIAD

There was broad consensus that the air component is the least developed leg of China's nuclear triad because of the age of its bomber fleet. Nevertheless, China has counteracted the age of its fleet by equipping bombers with standoff missiles, which can be fired far away from the target and from beyond the range of Indian air defenses.³⁰ In addition, China is rumored to be developing a long-range stealth bomber, the H-20. However, some interviewees viewed the H-20 as largely a vanity project, more akin to a form of information warfare than a serious warfighting system, possibly because they did not think China has the technological capacity to build it. Others, however, took a different view, suggesting that China's air-based deterrent could become much more potent once the H-20 is deployed. In addition, some saw the air component of the triad as significant in terms of its ability to be used for signaling purpose in a crisis; the logic here is presumably that China could launch its bombers to indicate its nuclear forces are on heightened alert.

The interviewees agreed that China has developed, presumably with Russian assistance, an impressive array of land-based forces. The DF-41, China's fourth-generation ICBM, and its multiple independently targetable reentry vehicle (MIRV) capability is viewed as a key indicator of China's qualitative superiority over India and its missile system, especially because the DF-41 has the potential to be developed into a hypersonic glide vehicle (HGV). Some interviewees thought that the key reason China is developing the DF-41-based HGV is, as noted by US government sources, because it could travel via the South Pole and potentially evade US missile defense systems.³¹ Other Indian analysts have noted that "China's enhanced capability of nuclear armed IRBMs (DF-26) and ICBMs . . . have further complicated the nuclear deterrence equation."³² Many Indian analysts think that China sees qualitative modernization as being necessary for penetrating the US ballistic missile defenses. Analysts also note the dramatically increased accuracy of China's missiles, including for conventional as well as nuclear payloads.

Instead of continuing to build on its achievements in land-based missiles, some analysts suspect that China is now shifting its attention to its sea-based deterrent. Irrespective of the focus, one of the dangers of China's nuclear triad is the development of dual-use systems, which, because of the problem of distinguishing between conventional and nuclear weapons, increase the possibility of inadvertent escalation.

The interviewees generally viewed China's ballistic missile submarines (SSBNs) as a weaker triad leg than its land-based forces. Some argued that China has not invested heavily in SSBNs, given that their development has been problematic and they do not conduct many nuclear deterrent patrols. Another, slightly more nuanced view was that only some Chinese SSBNs are deployed on patrol duties. Moreover, some interviewees suggested that China's submarine-launched ballistic missiles (SLBMs) are not as accurate as its land-based missiles. A more extreme perspective was that China is struggling with its SSBN program and that the United States remains "the big boss" in terms of sea-based nuclear forces. Many of the interviewees also raised questions about delegation of authority as well as communication issues with the SSBNs, even though there was acknowledgment that China had land-based and space-based communication systems in place. Although some interviewees predicted that SSBNs are going to be the centerpiece of China's nuclear force—because of a potent force of six Jin-class submarines, each armed with 12 missiles—most analysts appeared to think that SSBNs will instead be a complement to China's land-based missiles.

TACTICAL NUCLEAR WEAPONS

Some analysts have publicly expressed concerns about China's tactical nuclear weapons (TNWs) and the possibility of a low threshold for their use, but surprisingly, these concerns do not appear to be widely shared among the Indian strategic community, and none of the retired officials interviewed for this report voiced such fears.³³ Those who do worry contemplate the possibility that China might use TNWs in a clash over Taiwan or in territories that it considers its own, such as Arunachal Pradesh. The United States has threatened the use of nuclear weapons in previous crises in Korea and Taiwan, and China could possibly use this history as an excuse in a future Taiwan crisis. However, most interviewees held to the view that China sees nuclear weapons as political, not military, weapons and would be foolish to use them, even in a Taiwan scenario, because doing so could potentially force a US intervention. The broad consensus among not only the interviewees but also other Indian analysts is that the main concern for India is not China's TNWs but the increase in intermediate-, medium-, and short-range missiles that target India.³⁴

DUAL-USE MISSILES

A major concern for many Indian analysts, including a number of interviewees, is China's development of dual-use missiles. A common view is that this will create ambiguity and exacerbate instability in Sino-Indian relations. Putting both conventional and strategic nuclear weapons under the People's Liberation Army Rocket Force (PLARF) is seen by some as a deliberate ploy to create ambiguities and as part of the type of psychological warfare that they believe China likes to wage. Interviewees also pointed out that there is no arms control agreement that addresses this issue. Concerns about dual-use extended even to the new silos that China is developing.

AREAS OF ANALYTICAL UNCERTAINTY

Given that those interviewed were working from similar sources, it is noteworthy that the interviewees disagreed about some important subjects. One of these areas of disagreement was the overall potency of China's nuclear forces. Some argued that China does not have a fully operational triad, probably because of the weakness in the sea-based leg of the triad. Others made the opposite point and contended that, contrary to Western assessments, there is indeed a fully functional triad. At least one former military official pointed to the major qualitative enhancement undertaken in terms of A2/AD capabilities, BMD systems, SSBNs, stealth bombers, and hypersonic systems. According to this official, there has been a qualitative jump in monitoring, detection, surveillance and tracking, and command and control systems; China is not only expanding but also modernizing its nuclear force.

Another subject on which there was little consensus is the rationale for expanding missile silos. Many interviewees suggested that the move might be a deception tactic, but they disagreed on the precise nature of the deception. Several argued that expansion may be used for diversifying missile-basing models (i.e., road mobility and silos) and is part of an effort to increase the security of China's nuclear forces and strengthen survivability. Some interviewees suggested that the new silos were being used to conceal the number of deployed missiles or to force an adversary to expend extra missiles targeting them.³⁵ Writing in 2021, one Indian analyst noted that by building silos, China "enhanced the dilemma any attacker would face by hiding its nuclear weapons, which meant that no attacker could be certain they could detect and destroy all of them."³⁶ Yet another variation on this theme pointed to the targeting complications that silos create for China's adversaries, which do not know which silos contain missiles and which contain dummies. Indian observers acknowledge that China has significant fear of a US nuclear first strike and that therefore survivability is a key concern; US attention to the silos has probably increased their deterrent value, which is likely what China was hoping for.

A third topic on which the interviewees did not exhibit consensus is the importance of institutional changes in China's nuclear command structure such as the creation of the PLARF and the Strategic Support Force (SSF), which had oversight of the PLA's space, cyber, and electronic warfare forces.³⁷ Some felt that recent innovations are not that important because, institutionally, command and control still rest with the president and China's Central Military Commission (CMC). They believed that conventional missiles up to a certain range will remain under the control of theater commands, but deployment of the rest of China's arsenal of missiles will require the involvement of the CMC. Others saw the establishment of the PLARF and SSF as important but evolutionary changes. Although institutional changes still leave civilians (in the form of the CMC) in control of China's nuclear forces, these interviewees held that establishing the PLARF as an independent service is intended both to overcome interservice rivalry and to better integrate conventional and nuclear forces.

Some noted the importance of the SSF as a response to future warfare, which will feature greater integration of space, cyber, and electronic warfare. The space network within the SSF will likely work with the PLARF as an enabler of China's nuclear forces. Another perspective saw the institutional changes as necessary to enhance political control and ease of operations—the SSF is a key enabler of China's nuclear capabilities, cutting across domains and providing for greater coordination. Yet



Prime Minister Narendra Modi addresses the media on the first day of the winter session of the Indian Parliament in New Delhi, on November 25, 2024. As prime minister, Modi heads the Nuclear Command Authority, which is responsible for command and control of and operational decisions regarding India's nuclear weapons program. (Photo by Manish Swarup/AP)

another view was that these institutions are not particularly impressive, especially the PLARF, which is a theater-based organization, representing stunted and substandard strategic thinking.

How Should India Respond?

Opinions among the interviewees about how India should respond to China's nuclear expansion were tied to their level of concern about the threat posed. Some were dismissive; others were deeply anxious and feared that China might be able to conduct a disarming first strike on India with its enhanced force. Broadly, the interviewees can be divided into those who believed that India does not need to expand its own force in response and those who felt that it might need to. The justifications for each of those positions varied.

Among the analysts who believe India's nuclear force is sufficient, one view was that while numbers are critical in the conventional military balance, they play only a limited role in nuclear deterrence. For instance, one former naval official said that China's nuclear expansion does not make a difference to India's security, not least because India has a submarine-based deterrent that worries China's military planners. Others contended that what China is doing in qualitative terms is far more

important than its quantitative advances. Many interviewees argued that India should not get into a numbers game with China and should instead address any imbalance qualitatively, focusing more attention on longer-range and submarine-launched missiles and on technology such as MIRVs.

Others were less sanguine. Some pointed out that by 2030, China will have around 1,000 nuclear warheads, and that Pakistan already has a greater number than India, suggesting the need to expand Indian forces. Others agreed that even though there is no need to match China weapon for weapon, the size of India's arsenal does matter, especially because a larger arsenal may embolden China to be more aggressive. Some pointed to the mismatch in terms of warhead yield, with China possessing thermonuclear weapons that have five times the yield of India's weapons. This relative weakness inspired suggestions that India needs many more warheads than the roughly 160 currently in its arsenal. An outlier view was that China's nuclear growth will reduce the effectiveness of India's deterrence, and that China will seek a counterforce strike capability against India. In short, all these analysts suggested that India needs to review the size of its arsenal, even though it does not need to change its NFU posture.

The interviewees expressed no concern about China's air-based deterrent. This attitude is perhaps surprising in light of reports in the Indian media that Chinese H-6K bombers are being deployed or flown near the Indian border.³⁸ There was, however, significant disagreement among the interviewees about whether land-based or submarine-based nuclear forces posed the more serious threat. As far as SSBNs are concerned, the chief worries were that China's SSBN fleet will become even more capable and that India has no means to track these submarines.

Regarding land-based missiles, two concerns expressed by many analysts were the variety of China's short-range and medium-range missiles and the presence of dual-use systems. The expansion of missile types increases the complexity of the threat that Indian air and missile defenses have to contend with. Interviewees speculated that the fact that China's short- and intermediate-range missiles can, if used in combination, hit the entire Indian subcontinent suggests that China is specifically focused on India. Concern was also voiced about the DF-26—an IRBM—because of its high accuracy and its dual-use capabilities, which makes it a credible counterstrike weapon.

Whether or not they called for an increase in the size of India's nuclear arsenal, all the interviewees believed that some sort of response is necessary. Five ideas for possible responses cropped up repeatedly in the interviews: review India's force structure; consider additional nuclear testing; reshape India's triad; ensure India has the ability to deter both Pakistan and China; and revisit India's NFU posture. Interviewees also reflected on the impact of such responses on relations with the United States.

The growing imbalance in size between the Indian and Chinese nuclear arsenals is likely to be the most powerful driver of any future shifts in Indian nuclear policy. The most likely effect of the growing imbalance will be changes to nuclear force structure, which refers not only to the overall size of the arsenal but also to the types of weapons within it and the balance between them. Indian policymakers will have to decide, for example, whether to prioritize the building of more SSBNs or of more land-based missiles. However, two points are worth noting. First, force structure change is more evolutionary than radical; and second, there was no consensus among the interviewees on how the force structure should be changed.

Nevertheless, there was a willingness among interviewees to review India's nuclear force structure. Among those who suggested changes, however, there was a considerable difference of opinion both on whether India should increase its arsenal and on what leg of the triad it should focus. Some analysts were concerned that in addition to the cost of building more weapons, protecting and storing those weapons is a problem, and therefore they suggested that India should expand its arsenal only modestly, to around 250 warheads. A contradictory view was that India needs to focus on quality and reliability and that cost should not be a constraining factor. The dominant view appears to be that India should not strive for a particular number of warheads but should focus on the capability of its nuclear deterrent. One former military official, for example, said that the size of India's arsenal should be based on three parameters: the force required to inflict unacceptable damage on its adversary; survivability of the force after an attack; and residual retaliatory capacity that needs to be maintained. He implied that India currently had an adequate arsenal, although the situation was dynamic and unpredictable. This official also agreed that India's decision-making should not be based on numbers but on capability, implying that India's deterrence was still not capable enough.

Nuclear testing has been a controversial issue in India because of claims that the tests conducted in 1998 (which are the most recent) were not successful and that further tests are needed. The general feeling among the interviewees was that India does not want to resume testing because it is not technically necessary and could be politically costly. A common view was that the country should continue to rely on computer simulations, and one former official even suggested that, in light of the significant improvement in India-US relations, New Delhi should partner with Washington to conduct simulation exercises and validate data. Some interviewees argued that India might not need to conduct tests now but might need to do so if it were to pursue new warhead designs. Nevertheless, even those who held this view believed that India should not be the first to start testing and should opt for additional nuclear tests only if China or Pakistan were to restart testing.

On the subject of developing India's nuclear triad, there was a wide spectrum of opinions but no consensus. One interviewee suggested that, given the expense and difficulty of developing SSBNs, India should focus on improving the delivery and accuracy of land-based systems. A more popular view argued for shifting toward SSBNs and even getting rid of the air-based leg of the nuclear triad, which always has to face the challenge of adversary air defenses. One former military official remarked that both airborne and land-based assets are easily targetable and argued that India should therefore focus on the relatively invulnerable SSBNs and on missiles with sufficient range to hit all of China. Other interviewees recommended focusing on all three legs of the triad, plus space capabilities.

Some framed India's options for responding to China's nuclear expansion in the context of the need for dual deterrence against China and Pakistan. One view was that Indian weapons having sufficient range would mitigate this problem because India could then devote different systems to the two countries. Although India has tested the Agni-V ICBM, whose range of 7,000–8,000 kilometers is sufficient to target all of China, it is unclear if the missile has been deployed operationally. While some earlier missiles (such as the Agni-III) can target China if deployed close to the border, this is not considered feasible because they could then be targeted more easily

by China.³⁹ Some interviewees suggested that China-Pakistan collusion will continue and that there is a certain amount of “strategic fusion”—that is, strategic collaboration across a number of security and defense sectors—between the two that could lead to sharing of targeting and early warning information.⁴⁰ A different view was that India should differentiate between a two-front war and a two-front threat. As India cannot successfully fight a two-front war, all means—including diplomacy, political alliances, and military partnerships—should be used to split the threats posed by China and Pakistan.

Overall, the interviewees did not favor India abandoning its NFU policy, though their support for it was lukewarm. One perspective was that the policy provides time to decide the scale of response. A former military official said that the Indian nuclear doctrine is “dynamic enough,” and the direction of India’s NFU policy will be determined by the actions of its adversaries. He also noted that India should maintain ambiguity and remarked that the doctrine is not cast in stone—although there have been no changes in the past 20 years. Another view was that India should review the size of its arsenal and explore some form of launch-on-warning capability, albeit without changing the declaratory NFU policy. Some interviewees viewed nuclear first-strike options as mainly theoretical and argued that India should therefore maintain its NFU posture even though it is only a declaratory policy; others argued against modifying NFU because it satisfies India’s need for essentially a retaliatory nuclear force.

On the other side of the debate, some interviewees felt that the military does not like NFU, believing that it is foolish to wait for an attack and then retaliate. Others focused less attention on NFU and instead criticized the shift in India’s nuclear doctrine from punitive action to massive retaliation that was announced in January 2003. Some questioned the value of the “constraints” that India imposed on itself through concepts such as “minimum deterrence” in the face of massive nuclear expansion by China.⁴¹

Another area of disagreement among the interviewees was how relations with the United States would be affected if India were to respond to China’s nuclear expansion by, for example, conducting additional tests or building a bigger arsenal. Some expected the United States to understand Indian concerns and be tolerant or even supportive of Indian responses. Among those interviewees who held these views, one said that there would be little concern in the United States if India were to develop a China-specific capability, because it could not reach the United States. Another perspective went further and suggested that the United States and others in the West would not be concerned even if India were to expand its nuclear forces, because the West understands the rapidly changing security scenario. Many of these analysts, though by no means all, were confident that relations with the United States would not be a problem, especially because India and the United States are partners in the Quadrilateral Security Dialogue (Quad), a group that also includes Australia and Japan.

However, some interviewees were not so optimistic about the US reaction. Among these analysts, the feeling was that if the Indian leadership decides testing is necessary, then tests should be conducted irrespective of American concerns—and irrespective of a general consensus among the interviewees that there is not a need to resume testing. Even those who felt that the US relationship is important nevertheless believed that India should do what is in its best interests. One interviewee suggested initially broaching issues regarding testing and China’s

nuclear expansion at the track 2 level rather than at the official level; others commented that they believed India and the United States are already having such conversations, especially on intelligence and information sharing.

Conclusion

Although there are some indications India had assessed that China would expand its nuclear arsenal, the scale and pace of the expansion has clearly come as a surprise. While the Indian debate about how to respond remains somewhat thin in terms of published articles and conferences on the subject, this is not for lack of concern, and it is likely that this debate will grow and gain traction as more details emerge about the size and nature of China's nuclear expansion.

There appears to be a broad consensus among Indian analysts that India should not abandon its NFU posture. At the same time, support for NFU is wide but shallow, and many of the former officials interviewed for this report felt the government should do what it deems best in terms of the country's nuclear doctrine. This attitude suggests that if the Indian government does decide to change the NFU policy, opposition from within the Indian strategic community will be limited. Whether the government would make such a move is uncertain, not least because India's political and military leadership is generally risk averse and may maintain NFU simply because they are uncomfortable with radical changes. On a more substantive note, it is also unclear how giving up NFU would enhance India's deterrent vis-à-vis China.

The key areas of disagreement among the interviewees appear to be about the drivers of China's nuclear expansion and what India's response should be. It is important to note here that these disagreements were not based on the institutional backgrounds of the interviewees. In other words, civilian officials did not always agree with other civilian officials on the diagnosis of a problem or a prescription to deal with it; the same was true of military officials. On the rationale for China's nuclear expansion, views varied widely, which is not surprising considering that China and nuclear experts across the globe are divided about why China is expanding its nuclear force. This diversity of opinion probably reflects that multiple factors are driving the expansion. On the Indian response, many interviewees argued that India should increasingly focus on improving and expanding its SSBN fleet, especially the missiles it carries, although this by no means amounted to a consensus. Indeed, even those who supported this position understood the problems of cost, of command and control, and of India's lack of indigenous technology associated with SSBNs. Broadly, therefore, the Indian security community seemed not to have reached a consensus about how to respond, although there certainly was a concern that China's recent moves have disadvantaged India in its deterrent relationship with China.

The idea of nuclear weapons as a political tool rather than a military one, the deterrent capacity of which does not depend on numbers, is deeply embedded in India's strategic culture. This suggests that India will not be pressured or inclined to seek any kind of parity or even proportionality with China's nuclear force. Indeed, India has also not felt pressured by Pakistan's arsenal, which is slightly larger than its own. It also should be acknowledged that India does not have the economic and technological capacity to match China in this arena.

Unless China's nuclear expansion should speed up considerably, India is likely to continue making slow but steady progress in both expanding the size of its arsenal and improving its technical capabilities in areas such as the range of its missiles, submarine-launched ballistic missiles, and nuclear submarines. India is likely to continue with a graduated approach that prioritizes land-based missiles but assigns growing importance to the sea-based leg of the arsenal. Concerns about vulnerability of the Indian force to Chinese attack may well motivate India to build more and smaller mobile missiles as well as to move more of its deterrent out to sea. The air leg of the triad will likely continue to be of lesser importance because India currently lacks the technological capacity to build long-range bombers, and there are few import options.

While India and China agreed to military disengagement along the border in October 2024, the border situation remains unresolved. However, there is little indication that nuclear weapons would play a part in any future border flare-ups, even if the situation were to escalate to full-scale war. This is noteworthy given that nuclear escalation is considered a serious problem with India's other adversary, Pakistan.

It is therefore difficult to predict what specific Chinese actions would change India's nuclear weapons trajectory. The most likely candidate is the resumption of Chinese nuclear testing. It is almost certain that if China (or Pakistan) resumes nuclear testing, India will follow suit. The effectiveness of India's 1998 tests has always been open to question, and a new round of tests would be an opportunity to put those concerns to rest. But the incentives for demonstrating this effectiveness are not so great that India would unilaterally undertake a new testing program.

Washington responded almost immediately to India's 1998 tests with a series of economic sanctions. (The United States also levied sanctions against Pakistan, which had responded to India's detonations a few weeks later with nuclear tests of its own.) However, circumstances soon changed and Washington came to acknowledge India's new status as a nuclear-weapon state. In the more recent past, the two countries' growing common interest in balancing China also led the United States to accept India's continued development of its nuclear arsenal. This acceptance is reinforced by the knowledge that India was—and remains—unlikely to concede to US pressures on denuclearization. Among the interviewees, the broad political and military support that the United States provides to India today was appreciated and expected, but the interviewees were adamant that India should develop its nuclear policy based on Indian interests alone, irrespective of US opinion.

The assessment in this report suggests that India's response to China's nuclear expansion will continue to be cautious and limited. Thus, it is unlikely to become a serious problem in US-India relations. At the same time, India and the United States could both benefit from closer interactions on addressing the rationale for and consequences of China's nuclear expansion. They could be well served by discussing subjects similar to those examined in this report: assessments of the reasons for the expansion, how large the expansion is likely to be, whether the expansion might be followed by doctrinal changes, and any potential alteration of the relationship between China's nuclear and conventional forces. Such closer cooperation might also strengthen growing US-India security ties.

Notes

1. Hans M. Kristensen et al., “Chinese Nuclear Forces, 2024: A ‘Significant Expansion,’” Federation of American Scientists, January 16, 2024, <https://fas.org/publication/chinese-nuclear-forces-2024-a-significant-expansion/>.
2. International Crisis Group, “Thin Ice in the Himalayas: Handling the India-China Border Dispute,” Asia Report no. 334, November 14, 2023, <https://www.crisisgroup.org/asia/south-asia/india-china/334-thin-ice-himalayas-handling-india-china-border-dispute>.
3. This report, it should be noted, maps perspectives of the Indian strategic community rather than predicts how the Indian government will respond. Areas of consensus among the interviewees thus should not be taken as indicators of specific policy outcomes. It is impossible to say whether the opinions of retired officials accurately reflect the perspective of the current Indian government. However, in the absence of formal statements, ascertaining the views of former officials and well-connected academic analysts remains the best method to understand the potential direction of Indian policy.
4. In total, the interviewees included 2 scholars, 13 former military officers, and 6 former civilian bureaucrats, including one from Defence Research and Development, an agency under India’s Ministry of Defence. Interviews were conducted between April and August 2023.
5. Based on a review of publicly available sources, there is not a large amount of secondary Indian policy literature on China’s possible doctrinal shifts. Research for this report included a review of the opinions and analyses published in major Indian newspapers such as *The Indian Express*, *The Hindu*, and *Hindustan Times*, as well as web-based publications such as *The Print* and analyses from Indian think tanks including the Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA), the Centre for Land Warfare Studies (CLAWS), the Centre for Joint Warfare Studies (CENJOWS), the National Maritime Foundation (NMF), and the Centre for Air Power Studies (CAPS). Many of those interviewed for this project identified Western open-source assessments as the basis for their information about China’s nuclear force modernization.
6. Although there were divergences in the views of foreign service officers and military officers, it is difficult to definitively correlate their views with their professional backgrounds.
7. Jeffrey Lewis, “China Is Radically Expanding Its Nuclear Missile Silos,” *Foreign Policy*, June 30, 2021, <https://foreignpolicy.com/2021/06/30/china-nuclear-weapons-silos-arms-control/>.
8. Matt Korda and Hans M. Kristensen, “A Closer Look at China’s Missile Silo Construction,” Federation of American Scientists, November 2, 2021, <https://fas.org/publication/a-closer-look-at-chinas-missile-silo-construction/>.
9. “The Arms Control Landscape, ft. DIA Lt. Gen. Robert P. Ashley, Jr.,” Hudson Institute, May 29, 2019, <https://www.hudson.org/national-security-defense/transcript-the-arms-control-landscape-ft-dia-lt-gen-robert-p-ashley-jr>.
10. The above details are from Hans M. Kristensen and Matt Korda, “China’s Nuclear Missile Silo Expansion: From Minimum Deterrence to Medium Deterrence,” *Bulletin of the Atomic Scientists*, September 1, 2021, <https://thebulletin.org/2021/09/chinas-nuclear-missile-silo-expansion-from-minimum-deterrence-to-medium-deterrence/>.
11. Hans M. Kristensen and Matt Korda, “Chinese Nuclear Forces, 2019,” *Bulletin of the Atomic Scientists* 75, no. 4 (2019): 171–178.
12. “The Arms Control Landscape.”
13. Hans M. Kristensen and Matt Korda, “Chinese Nuclear Forces, 2020,” *Bulletin of the Atomic Scientists* 76, no. 6 (2020): 443–457.
14. US Department of Defense, “Military and Security Developments Involving the People’s Republic of China 2022,” November 29, 2022, <https://media.defense.gov/2022/Nov/29/2003122279/-1/-1/2022-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF>; US Department of Defense, “Military and Security Developments Involving the People’s Republic of China 2023,” October 19, 2023, <https://media.defense.gov/2023/Oct/19/2003323409/-1/-1/2023-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF>; and US Department of Defense, “Strategy for Countering Weapons of Mass Destruction 2023,” September 28, 2023, https://media.defense.gov/2023/Sep/28/2003310413/-1/-1/2023_STRATEGY_FOR_COUNTERING_WEAPONS_OF_MASS_DESTRUCTION.PDF.
15. Hans M. Kristensen et al., “Chinese Nuclear Weapons, 2024,” *Bulletin of the Atomic Scientists* 80, no. 1 (2024): 49–72.
16. Sky Lo, “Could China’s ‘Hot-Swappable’ Missile System Start an Accidental Nuclear War?,” *Bulletin of the Atomic Scientists*, April 8, 2022, <https://thebulletin.org/2022/04/could-chinas-hot-swappable-missile-system-start-an-accidental-nuclear-war/>.
17. Eric Heginbotham et al., *China’s Evolving Nuclear Deterrent: Major Drivers and Issues for the United States* (RAND Corporation, 2017), https://www.rand.org/pubs/research_reports/RR1628.html.
18. Launch-on-warning is a preemptive nuclear attack based on intelligence or warning that an enemy nuclear attack is imminent, but before that attack has been launched. Launch-under-attack refers to a nuclear strike after an enemy nuclear attack has started but before the attack reaches its target.

19. Some of the secondary analyses appear to be based on Western open sources. There does not appear to be any official Indian assessment available in the open domain. See Rajiv Nayan, “Pentagon Report and the Chinese Nuclear Forces Assessment,” MP-IDSA Issue Brief, Manohar Parrikar Institute for Defence Studies and Analyses, December 14, 2021, https://www.idsa.in/system/files/issuebrief/Issue_Brief_Dr_Rajiv_Nayan_141221.pdf; and Manpreet Sethi, “China’s Nuclear Build-up: Implications for India,” Organization for Research on China and Asia, December 27, 2022, <https://orcasia.org/article/138/chinas-nuclear-build-up>.
20. See US Department of Defense’s “China Military Power” reports available at <https://nuke.fas.org/guide/china/dodreports.htm>. Note that these reports speak generically about China’s quantitative nuclear expansion.
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22. Yogesh Joshi and Frank O’Donnell, *India In Nuclear Asia: Evolution of Regional Forces, Perceptions, and Policies* (Orient BlackSwan, 2018), 121.
23. Dmitry Stefanovich, “Russia to Help China Develop an Early Warning System,” *The Diplomat*, October 25, 2019, <https://thediplomat.com/2019/10/russia-to-help-china-develop-an-early-warning-system/>.
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25. For an English-language version of the 2013 Defense White Paper, see Information Office of the State Council of the People’s Republic of China, “The Diversified Employment of China’s Armed Forces,” April 2013, http://english.www.gov.cn/archive/white_paper/2014/08/23/content_281474982986506.htm.
26. Indian scholars have likewise argued that China’s nuclear expansion is status driven. See Rajesh Rajagopalan, “China Is Building Several New Nuclear Silos: India Must Watch Closely, but Not Panic,” *The Print*, July 12, 2021, <https://theprint.in/opinion/china-is-building-several-new-nuclear-silos-india-must-watch-closely-but-not-panic/694145/>.
27. Sethi, “China’s Nuclear Build-up.”
28. Anti-access/area denial (A2/AD) refers to Chinese efforts to prevent access to US military forces or deny an area to US military forces. This is practiced in maritime areas close to Chinese territory, especially around Taiwan, the South China Sea, and the East China Sea.
29. “Global strike” refers to long-range strike capabilities using hypersonic and stealth weapons. Other Indian analysts have made similar observations about the US withdrawal from the INF Treaty. See Sethi, “China’s Nuclear Build-up”; Manpreet Sethi, “Xi’s Nuclear Garden: Of Sprawling Silos and Sobering Messages,” *Air Power Journal* 16, no. 4 (Winter 2021), <https://capsindia.org/wp-content/uploads/2022/04/Manpreet-Sethi.pdf>.
30. Akhil Kadidal, “Chinese Bomber Launches New Ballistic Missile,” *Janes*, May 3, 2024, <https://www.janes.com/defence-news/news-detail/chinese-bomber-launches-new-ballistic-missile>.
31. Kelley M. Saylor of the Congressional Research Service has written about China’s development of hypersonic glide vehicles and the DF-41 ballistic missile in a report first published in March 2020 and updated several times since then. See “Defense Primer: Hypersonic Boost-Glide Weapons,” <https://crsreports.congress.gov/product/details?prodcode=IF11459>.
32. Rajesh Gupta, “India’s NFU Stance: Need to Change Amidst the Changing Strategic Landscape,” Issue Brief no. 351, Centre for Land Warfare Studies, July 2022, https://www.claws.in/static/IB-351_India%E2%80%99s-NFU-Stance-Need-to-Change-Amidst-the-Changing-Strategic-Landscape-2.pdf.
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34. See also Nayan, “Pentagon Report and the Chinese Nuclear Forces Assessment.”
35. Similar arguments have been made by other Indian analysts in writing. See, for instance, Sethi, “China’s Nuclear Build-up.”
36. Rajagopalan, “China Is Building Several New Nuclear Silos.”
37. The Strategic Support Force was broken into three component forces—the Aerospace Force, Cyberspace Force, and Information Support Force—in April 2024, after the interviews for this report were conducted.
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